WHAT IS CLAIMED IS:

1. A method for allocating a network resource to a data path, comprising:

determining if a sufficient amount of the network resource is available in a network path to accommodate the data path;

obtaining a cost associated with using the network resource available in the network path for the data path; and

deciding whether to allocate the network resource in the network path to the data path based on the amount of the network resource and the cost associated with using the network resource.

2. The method of claim 1, wherein the network resource comprises bandwidth.

3. The method of claim 1, wherein deciding comprises:

comparing the cost to a predetermined maximum acceptable cost.

4. The method of claim 3, wherein the cost includes a number of hops on the network path between a source and a destination on the network.

5. The method of claim 4, wherein the number of hops is obtained by reference to a topology database for determining a path between the source and the destination.

6. The method of claim 3, further comprising:

allocating, to the data path, the network resource available in the network path if (i) the cost is at or below the predetermined maximum acceptable cost, and (ii) there is enough of the network resource available in the network path to accommodate the data path.

7. The method of claim 1, wherein, if it is decided not to allocate the network resource available in the network path to the data path, the method further comprises:

repeating determining, obtaining and deciding by substituting a network resource available to an Nth ($N \geq 2$) network path for the network resource available to the network path.

8. The method of claim 1, wherein the data path comprises a label switched path (LSP) on a multiprotocol label switching (MPLS) network.

9. The method of claim 1, wherein determining if enough of the network resource is available comprises:

determining an amount of the network resource that is available on the network path but that is not being used by existing data packets on the network path; and

comparing an amount of the network resource needed by the data path to the amount of the network resource that is available on the network path but that is not being used by the existing data packets.

10. The method of claim 1, wherein the data path has a predetermined priority level and deciding whether to allocate the network resource to the data path takes into account the predetermined priority level of the data path.

11. The method of claim 10, further comprising:

taking at least a portion of the network resource in the network path that is being used by a data path at a different priority level from the predetermined priority level to accommodate the data path at the predetermined priority level.

12. The method of claim 11, wherein the predetermined priority level is a higher priority level than the different priority level.

13. A method of configuring a label switched path (LSP) through a multiprotocol label switching (MPLS) network, the method comprising:

determining if there is sufficient unused bandwidth on a network path to accommodate the LSP; and

allocating the unused bandwidth of the network path to the LSP if there is sufficient unused bandwidth available.

14. The method of claim 13, further comprising:

obtaining a cost associated with using the unused bandwidth on the network path for the LSP;

wherein allocating comprises using the unused bandwidth if the cost is below a predetermined maximum cost.

15. The method of claim 14, wherein the cost comprises a number of hops associated with the network path between a source and a destination on the MPLS network.

16. The method of claim 13, wherein determining comprises successively checking plural other network paths to determine which one, if any, of the plural other network paths has sufficient unused bandwidth available to accommodate the LSP.

17. The method of claim 13, wherein the LSP has a predetermined priority level and allocating the unused bandwidth to the LSP takes into account the predetermined priority level of the LSP.

18. The method of claim 17, wherein allocating comprises taking at least a portion of the bandwidth in the network path that is being used by an LSP at a different priority level from the predetermined priority level for use by the LSP at the predetermined priority level.

19. The method of claim 18, wherein the predetermined priority level is a higher priority level than the different priority level.

20. A computer program stored on a computer-readable medium for allocating a network resource to a data path, the

computer program comprising instructions that cause a processor to:

determine if a sufficient amount of the network resource is available in a network path to accommodate the data path;

obtain a cost associated with using the network resource available in the network path for the data path; and

decide whether to allocate the network resource in the network path to the data path based on the amount of the network resource and the cost associated with using the network resource.

21. The computer program of claim 20, wherein the network resource comprises bandwidth.

22. The computer program of claim 20, wherein deciding comprises:

comparing the cost to a predetermined maximum acceptable cost.

23. The computer program of claim 22, wherein the cost includes a number of hops on the network path between a source and a destination on the network.

24. The computer program of claim 23, wherein the number of hops is obtained by reference to a topology database for determining a path between the source and the destination.

25. The computer program of claim 22, further comprising instructions that cause the processor to:

allocate, to the data path, the network resource available in the network path if (i) the cost is at or below the predetermined maximum acceptable cost, and (ii) there is enough of the network resource available in the network path to accommodate the data path.

26. The computer program of claim 20, further comprising instructions that cause the processor to:

repeat determining, obtaining and deciding by substituting a network resource available to an Nth ($N \geq 2$) network path for the network resource available to the network path if it is decided not to allocate the network resource available in the network path to the data path.

27. The computer program of claim 20, wherein the data path comprises a label switched path (LSP) on a multiprotocol label switching (MPLS) network.

28. The computer program of claim 20, wherein determining if enough of the network resource is available comprises:

determining an amount of the network resource that is available on the network path but that is not being used by existing data packets on the network path; and

comparing an amount of the network resource needed by the data path to the amount of the network resource that is available on the network path but that is not being used by the existing data packets.

29. The computer program of claim 20, wherein the data path has a predetermined priority level and deciding whether to allocate the network resource to the data path takes into account the predetermined priority level of the data path.

30. The computer program of claim 29, further comprising instructions that cause the processor to:

take at least a portion of the network resource in the network path that is being used by a data path at a different priority level from the predetermined priority level to accommodate the data path at the predetermined priority level.

31. The computer program of claim 30, wherein the predetermined priority level is a higher priority level than the different priority level.

32. A computer program stored on a computer-readable medium for configuring a label switched path (LSP) through a multiprotocol label switching (MPLS) network, the computer program comprising instructions that cause a processor to:

determine if there is sufficient unused bandwidth on a network path to accommodate the LSP; and

allocate the unused bandwidth of the network path to the LSP if there is sufficient unused bandwidth available.

33. The computer program of claim 32, further comprising instructions that cause the processor to:

obtain a cost associated with using the unused bandwidth on the network path for the LSP;

wherein allocating comprises using the unused bandwidth if the cost is below a predetermined maximum cost.

34. The computer program of claim 33, wherein the cost comprises a number of hops associated with the network path between a source and a destination on the MPLS network.

35. The computer program of claim 32, wherein determining comprises successively checking plural other network paths to determine which one, if any, of the plural other network paths has sufficient unused bandwidth available to accommodate the LSP.

36. The computer program of claim 32, wherein the LSP has a predetermined priority level and allocating the unused bandwidth to the LSP takes into account the predetermined priority level of the LSP.

37. The computer program of claim 36, wherein allocating comprises taking at least a portion of the bandwidth in the network path that is being used by an LSP at a different priority level from the predetermined priority level for use by the LSP at the predetermined priority level.

38. The computer program of claim 37, wherein the predetermined priority level is a higher priority level than the different priority level.

39. An apparatus for allocating a network resource to a data path, the apparatus comprising circuitry which:

determines if a sufficient amount of the network resource is available in a network path to accommodate the data path;

obtains a cost associated with using the network resource available in the network path for the data path; and

decides whether to allocate the network resource in the network path to the data path based on the amount of the network resource and the cost associated with using the network resource.

40. The apparatus of claim 39, wherein the network resource comprises bandwidth.

41. The apparatus of claim 39, wherein deciding comprises:

comparing the cost to a predetermined maximum acceptable cost.

42. The apparatus of claim 41, wherein the cost includes a number of hops on the network path between a source and a destination on the network.

43. The apparatus of claim 42, wherein the number of hops is obtained by reference to a topology database for determining a path between the source and the destination.

44. The apparatus of claim 41, wherein the circuitry allocates, to the data path, the network resource available in the network path if (i) the cost is at or below the predetermined maximum acceptable cost, and (ii) there is enough of the network resource available in the network path to accommodate the data path.

45. The apparatus of claim 39, wherein, if it is decided not to allocate the network resource available in the network path to the data path, the circuitry repeats determining, obtaining and deciding by substituting a network resource available to an Nth ($N \geq 2$) network path for the network resource available to the network path.

46. The apparatus of claim 39, wherein the data path comprises a label switched path (LSP) on a multiprotocol label switching (MPLS) network.

47. The apparatus of claim 39, wherein determining if enough of the network resource is available comprises:

determining an amount of the network resource that is available on the network path but that is not being used by existing data packets on the network path; and

comparing an amount of the network resource needed by the data path to the amount of the network resource that is available on the network path but that is not being used by the existing data packets.

48. The apparatus of claim 39, wherein the data path has a predetermined priority level and deciding whether to allocate the network resource to the data path takes into account the predetermined priority level of the data path.

49. The apparatus of claim 48, wherein the circuitry takes at least a portion of the network resource in the network path that is being used by a data path at a different

priority level from the predetermined priority level to accommodate the data path at the predetermined priority level.

50. The apparatus of claim 49, wherein the predetermined priority level is a higher priority level than the different priority level.

51. The apparatus of claim 39, wherein the circuitry comprises a memory which stores computer instructions and a processor which executes the computer instructions.

52. The apparatus of claim 39, wherein the circuitry comprises one or more of an integrated circuit and programmable logic.

53. An apparatus for configuring a label switched path (LSP) through a multiprotocol label switching (MPLS) network, the apparatus comprising circuitry which:

determines if there is sufficient unused bandwidth on a network path to accommodate the LSP; and

allocates the unused bandwidth of the network path to the LSP if there is sufficient unused bandwidth available.

54. The apparatus of claim 53, wherein:

the circuitry obtains a cost associated with using the unused bandwidth on the network path for the LSP; and

allocating comprises using the unused bandwidth if the cost is below a predetermined maximum cost.

55. The apparatus of claim 54, wherein the cost comprises a number of hops associated with the network path between a source and a destination on the MPLS network.

56. The apparatus of claim 53, wherein determining comprises successively checking plural other network paths to determine which one, if any, of the plural other network paths has sufficient unused bandwidth available to accommodate the LSP.

57. The apparatus of claim 53, wherein the LSP has a predetermined priority level and allocating the unused bandwidth to the LSP takes into account the predetermined priority level of the LSP.

58. The apparatus of claim 57, wherein allocating comprises taking at least a portion of the bandwidth in the network path that is being used by an LSP at a different priority level from the predetermined priority level for use by the LSP at the predetermined priority level.

59. The apparatus of claim 58, wherein the predetermined priority level is a higher priority level than the different priority level.